The influence on the transfer functions of different a-SiC:H sensing absorbers optimized for red transmittance and blue collection are analyzed. Results show that when a thin (<2000 Å) a-SiC:H sensing and a thick (>5000 Å) a-Si:H switching absorber are used, the device behaves itself as a filter giving information about the wavelength and the position where the optical image is absorbed. By sampling the absorption region at two bias voltages it is possible to extract separately the RGB integrated information with a good rejection ratio. A readout of 1000 lines per second is achieved allowing continuous and fast image sensing, and color recognition. A transient SPICE model of the three color detector operation will be presented and supported by a 2D numerical simulation.

T01.O12 Temperature dependence of GeO_2 doped silica absorption bands and its consequence on the characteristics of optical fibres.

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Nowadays the worldwide telecommunications traffic is mainly supported by optical communications employing Silica optical fibres. The main information transmission limitation is imposed by the optical pulses temporal broadening, resulting from the dispersive properties of the transmission medium (chromatic dispersion).

To assure the waveguide propagation, the fibre core should have a higher refractive index than that of the cladding. This index rising is obtain by doping the Silica with Germanium, (typically 3 % mol).

The variation of fibre dispersion with temperature is certainly one of the vital parameters for the design of future high debit optical communication systems and networks[1].

The classical Lorentz's oscillator model is able to account for the Silica electronic transitions and lattice vibrations, from which the Silica Sellmeier's equation can be derived, enabling the description of the material refractive index variation with wavelength (dispersion). Usually is enough to consider a two-term Sellmeier formalism, where all electronic oscillators were lumped into one effective term, and all lattice vibrational oscillators into another.

We have exhaustively studied the dispersion dependence with temperature for GeO_2 doped Silica core optical fibres. It was found that the dispersion temperature dependence is mainly due to a -0.4 meV/ºC temperature shift of the electronic Sellmeier band gap energy (around 11 eV). Moreover, the resonance energy is at approximately 0.14 eV, which corresponds to a lattice vibration and it is almost independent of the temperature.

We have also developed a simplified model to account for the temperature effect in first and second order chromatic dispersion, based on a heuristic expression, frequently used to extrapolate the chromatic dispersion from the zero dispersion wavelength.

[1] P. S. André, A. N. Pinto, Chromatic Dispersion Fluctuations in Optical Fibers Due to Temperature and Its Effects in High-Speed Optical Communication Systems, Optics Communications, December 2004.

T01.O13 Effect of magnetic field on the luminescence properties of rare-earth phosphate glasses during heat treatment

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It is well-known that the magnetic field affects the kinetics of crystallization in solutions and glasses; however, the details of the mechanism are not well understood [1, 2]. One of the difficulties in making a model stems from the fact that available experimental data is mostly on multicomponent systems [3]. Therefore, we study the binary rare-earth phosphate glasses in which we focus on the